

Appl. No. 09/865,295
Amd. Dated March 3, 2005
Reply to Office Action of December 13, 2004

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A method for monitoring performance of an optical communication link, said method comprising:

at a first intermediate location along said link, separating a portion of an optical signal traveling along said link to form a first measurement optical signal;

detecting said first measurement optical signal to form a first measurement electrical signal; and

performing error correction decoding on said first measurement electrical signal to generate an indication of correct receipt of data at said first intermediate location.

Claim 2 (original): The method of claim 1 further comprising:

using said indication of correct receipt of data at said first location to determine a fault along said link prior to said first intermediate location.

Claim 3 (original): The method of claim 1 wherein said optical signal comprises a WDM signal and separating comprises:

isolating a portion of a particular wavelength component of said optical signal.

Claim 4 (original): The method of claim 1 further comprising:

at a second location along said link, separating a portion of an optical signal traveling along said link to form a second measurement optical signal;

detecting said second measurement optical signal to form a second measurement electrical signal; and

performing error correction decoding on said second measurement electrical signal to generate an indication of correct receipt of data at said second intermediate location.

Claim 5 (original): The method of claim 4 further comprising:

Appl. No. 09/865,295
Amd. Dated March 3, 2005
Reply to Office Action of December 13, 2004

using said indications of correct receipt of data at said first intermediate location and at said second intermediate location to locate a fault along said link prior to said second intermediate location.

Claim 6 (original): Apparatus for monitoring performance of an optical communication link at an intermediate location along said link, said apparatus comprising:

a coupler that separates a portion of an optical signal traveling along said link;
an optical receiver that recovers data based on said portion of said optical signal;
an error correction decoding circuit that identifies errors in receipt of said data; and
a link verification stage that generates an indication of link operation based on errors identified by said error correction decoding circuit.

Claim 7 (original): The apparatus of claim 6 further comprising:
a filter that isolates a particular wavelength component of said portion of said optical signal for input to said optical receiver.

Claim 8 (original): The apparatus of claim 7 further comprising:
an optical amplifier that boosts portion of said optical signal.

Claim 9 (original): The apparatus of claim 7 wherein said filter comprises a tunable filter.

Claim 10 (original): The apparatus of claim 9 wherein said link verification stage tunes said tunable filter to test a selected wavelength component.

Claim 11 (original): The apparatus of claim 6 wherein said optical receiver comprises:
a photodetector circuit that generates an electrical signal based on said portion of said optical signal; and
a demodulator that recovers data from said electrical signal.

Appl. No. 09/865,295
Amd. Dated March 3, 2005
Reply to Office Action of December 13, 2004

Claim 12 (original): A system for locating a fault along an optical communication link, said system comprising:

a first link monitor that monitors performance of said link at a first intermediate location along said link; and

a second link monitor that monitors performance of said link at a second intermediate location along said link; and

wherein each of said first link monitor and said second link monitor comprise:

a coupler that separates a portion of an optical signal traveling along said link;

an optical receiver that recovers data based on said portion of said optical signal;

an error correction decoding circuit that identifies errors in receipt of said data;

and

a link verification stage that generates an indication of link operation based on errors detected by said error correction decoding circuit.

Claim 13 (original): The system of claim 12 wherein a fault is located based on said indications of link operation from said first link monitor and said second link monitor.

Claim 14 (original): The system of claim 12 wherein each of said first link monitor and said second link monitor further comprise:

a filter that isolates a particular wavelength component of said portion of said optical signal for input to said optical receiver.

Claim 15 (original): The system of claim 14 wherein said filter comprises a tunable filter.

Claim 16 (original): The system of claim 12 wherein said optical receiver comprises: a photodetector circuit that generates an electrical signal based on said portion of said optical signal; and

a demodulator that recovers data from said electrical signal.

Appl. No. 09/865,295
Amd. Dated March 3, 2005
Reply to Office Action of December 13, 2004

Claim 17 (original): Apparatus for monitoring performance of an optical communication link at an intermediate location along said link, said apparatus comprising:

means for separating a portion of an optical signal traveling along said link;
means for recovering data based on said portion of said optical signal;
means for identifying errors in receipt of said data; and
means for generating an indication of link operation based on errors detected by said error identifying means.

Claim 18 (original): The apparatus of claim 17 further comprising:

means for isolating a particular wavelength component of said portion of said optical signal for input to said recovering means.

Claim 19 (original): The apparatus of claim 18 wherein said isolating means comprises a tunable filter.

Claim 20 (original): The apparatus of claim 19 wherein said generating means tunes said tunable filter to test a selected wavelength component.

Claim 21 (original): The apparatus of claim 17 wherein said recovering means comprises:

a photodetector circuit that generates an electrical signal based on said portion of said optical signal; and
a demodulator that recovers data from said electrical signal.

Claim 22 (currently amended): A method for locating a fault on an optical link, said method comprising:

receiving indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link; and
determining a location of said fault to be beyond a last monitor location receiving said data optical signal successfully.

Appl. No. 09/865,295
Amd. Dated March 3, 2005
Reply to Office Action of December 13, 2004

Claim 23 (currently amended): Apparatus for locating a fault on an optical link, said apparatus comprising:

means for receiving indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link; and

means for determining a location of said fault to be beyond a last monitor location receiving said data optical signal successfully.

Claim 24 (currently amended): A computer program product for locating a fault on an optical link, said product comprising:

code that causes reception of indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link;

code that causes a location of said fault to be determined to be beyond a last monitor location receiving said data optical signal successfully; and

a computer-readable storage medium that stores the codes.

Claim 25 (currently amended): Apparatus for locating a fault on an optical link, said apparatus comprising:

a processor that executes instructions;

a computer-readable storage medium that stores said instructions, said instructions comprising:

code that causes reception of indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link; and

code that causes a location of said fault to be determined to be beyond a last monitor location receiving said data optical signal successfully.